

## **Draft Geotechnical NPDES General Permit (AKG-28-4300) – Follow-Up Questions for Shell**

EPA would like to discuss the following questions in response to Shell's comment letter and associated attachments regarding the draft Geotechnical GP, submitted on February 18, 2014.

1. Discharge Volumes – EPA addressed the discharge volumes from geotechnical boring activities as compared to exploration well drilling in Section 2.2 and throughout the draft Ocean Discharge Criteria Evaluation (ODCE). This analysis was based on discharge volume information submitted by Shell in its April 3, 2013 NPDES permit application and the estimated number of boreholes information submitted by the Alaska Oil and Gas Association (AOGA). Shell's written comments on the draft Geotechnical GP did not address the discharge volumes and EPA's assumptions presented in Table 6-4 of the ODCE. Given that EPA's analysis and the underlying assumptions were based on information provided by Shell and AOGA, revisiting this analysis will require detailed and specific information. Please provide specific information addressing EPA's assumptions regarding discharge volumes along with all necessary supporting documentation. In addition, as pointed out by Shell in its comments, EPA's ODCE assumed all holes would utilize drilling fluids. (See #5, Use of drilling fluids, below.) Given Shell's comments that this is not consistent with intended operations, please provide an estimate of the number of holes and the depths of the holes for which drilling fluids are likely to be used.
2. EMP Requirements – As explained in the permit and Fact Sheet, the draft Geotechnical GP requires two phases of the EMP. Phase I includes a physical (wind/current speed and direction, water temperature, salinity, depth and turbidity) and visual characterization of the seafloor at each borehole location. A Phase II assessment includes non-contact cooling water discharge observations and physical sea bottom survey, which is only required if drilling fluids are used. Please explain how Shell views the geotechnical EMP requirements to be similar to the four phases of the EMP required under the exploration general permits (Attachment 1, comment II, page 5). Also, Shell pointed to various baseline and monitoring programs as the bases for removal of the EMP requirements. Please explain how data from these monitoring programs would meet the objective and information needs of an EMP, such as specific depositional data from each geotechnical discharge location.
3. Once per batch – EPA's use of the term "batch" and related permit assumptions and provisions were based on information previously provided by AOGA. For example, #4 of the AOGA response document indicated that one batch of drilling fluids could be used across multiple boreholes; any unused drilling fluids would be used at the next borehole and mixed drilling fluids that remain in the tanks at the end of the season would be discharged. Based on this information, EPA understood one batch could be used to drill multiple boreholes. According to Shell's comments on the Geotechnical GP, however, certain situations may require the opposite, i.e. multiple batches would be needed for every 20 feet of borehole drilled (Attachment 1, page 9). Also, as reported in Shell's NPDES permit application, the mud pit would be periodically cleaned and the excess materials discharged at an estimated volume of 2400 gal/day. Please clarify this issue by providing: 1) specific information on the estimated volumes discharged per batch; 2) the frequency at which new batches of drilling fluids will be mixed on a per borehole basis; and 3) the likelihood that a new mud formulation would be used during the course of a season.

4. Geotechnical related activities – Shell’s comments did not provide specific information to inform the description of geotechnical related activities in the ODCE (Attachment 2, #17). Please provide the specific details addressing EPA’s assumptions of the estimated level of activity, area of potential impact, discharge volumes, and the nature, frequency, type and locations of geotechnical related activities that could occur during the 5-year term of the permit.
5. Use of drilling fluids – Shell’s comments state, “Shell does not anticipate using muds except in deeper borings, and we do not anticipate deeper borings to constitute a substantial part of our geotechnical programs. *If* drilling muds are used, the volumes are minimal and extremely short term in duration...” (Attachment 2, #21). As the Geotechnical GP is a general permit that may apply to multiple operators, it is not unusual for EPA to rely on conservative assumptions to evaluate potential impacts from discharges. In addition, Table 2 of the AOGA response document reported estimated volumes of cuttings and drilling fluids discharged per borehole, including the shallow borings drilled at 50 ft. The statement in Shell’s comment letter does not provide a sufficient basis for assumptions regarding drilling fluid use and/or discharge volumes. If Shell has additional information or estimates on the number of boreholes for which drilling fluids are likely to be used, please provide it for EPA’s consideration. Similarly, if drilling fluids will not be used to drill any shallow borehole, i.e. those that are drilled 50 feet or less below the seafloor surface, then Shell must explicitly say so.
6. Predictive modeling – Shell’s comments asserted that the currents used for EPA’s dispersion model are not representative of conditions in the nearshore environment (Attachment 2, #25). Please provide the specific information Shell has identified in EPA’s model assumptions and provide the data that should be considered representative.
7. Pre-site characterization – Shell discussed its pre-siting activities to avoid any potential sensitive or archaeologically important areas (Attachment 2, #52). Please provide additional information regarding the specific regulatory authority or jurisdiction under which this pre-siting work is being performed, to whom the data is reported, and the locations and the distances of the pre-site surveys relative to the individual borehole locations.
8. Lack of substance in Shell’s comments – Shell pointed to multiple places in the ODCE that lacked details and understanding by EPA, yet specific and substantive details supporting these statements were not provided. Please provide the specific information or details that should have been included in the ODCE. Below are several examples from Attachment 2:
  - a) Comment #19 stated that several significant differences between exploration and geotechnical surveys are not identified, including type of discharge, cutting size and depositional pattern. Please provide this information.
  - b) Comment #20 pointed to the lack of detailed description of conventional methods of coring and of “related activities.” Please provide the information to assist with characterizing these activities.
  - c) Comment #39 referenced numerous biomagnification studies of drilling fluid discharges conducted since the 1980s that demonstrates that bioavailability and bioaccumulation are negligible. Please provide references for these studies.